Listing of Claims

1. (Original) Method of segmenting a three-dimensional structure from a three-dimensional data record, containing in particular medical data values, comprising the steps of:

a) providing a three-dimensional, deformable model whose surface area is formed by a network of meshes, which connect together points of the network on the surface area of the model, the meshes being divided into groups and each group being allocated a structure function,

b) arranging the model at the position in the three-dimensional data record in which the structure to be segmented is located,

c) determining one candidate point for each mesh with the aid of the structure function of the group to which the mesh concerned belongs,

d) recalculating the points of the network of the model on the basis of the candidate points found,

e) repeating steps c) and d), taking the newly calculated points of the network into account, as long as no termination criterion is met.

2. (Original) The method as claimed in Claim 1, step a) comprising the following steps:

- providing a three-dimensional, deformable model whose surface area is formed by a network of meshes, which connect together points of the network on the surface area of the model,
- comparing each mesh with each adjacent, neighbouring mesh with the aid of a similarity criterion,
- gathering together into groups neighbouring meshes which are similar in accordance with the similarity criterion,
- assigning a structure function to each group.

3. (Original) The method as claimed in Claim 1, step a) comprising the following steps:

- providing a three-dimensional, deformable model in each case in a plurality of data sets, all the models having the same number of meshes and the meshes in each model having the same neighbourhood relationships,
- gathering together the meshes of all the models into groups,
- assigning the meshes with the same neighbourhood relationships to the group in which those meshes are contained most frequently,
- assigning one structure function to each group,
- taking the average of the models of the three-dimensional data sets in order to determine a deformable model.

4. (Currently Amended) The method as claimed in Claim 1, ~~characterised by~~wherein the fact that, in step c), from a set of points, that point is selected as the candidate point of a mesh for which the structure function exhibits an extreme, especially a maximum.

5. (Currently Amended) The method as claimed in Claim 1, ~~characterised by~~wherein the fact that, in step c), a candidate point of a mesh is found in that position on a normal of the surface area enclosed by the mesh at which the structure function exhibits an extremum, especially a maximum.

6. (Currently Amended) The method as claimed in Claim 1, ~~characterised by~~wherein the fact that the value of the structure function in a particular position in the three-dimensional data record is a measure of the probability that that particular position is located on a surface area of the structure to be segmented.

7. (Currently Amended) The method as claimed in Claim 1, ~~characterised by~~wherein the fact that, in step d), the points of the network are recalculated, while minimising a weighted sum of external and internal energy.

8. (Original) An image processing device for performing the method of Claim 1 with

- a memory unit for storing at least one deformable model whose surface area is formed by a network with meshes connecting points of the network on the surface area of the model, and for storing at least one three-dimensional data record, containing in particular medical data values,
- an image reproduction unit for reproducing a structure to be segmented, or already segmented, and the at least one deformable model,
- a calculator unit for recalculating the points of the network of the at least one model,
- an arrangement unit for arranging the model, at the position in the three-dimensional data record at which the structure to be segmented is located,
- a control unit for controlling the memory unit, the image reproduction unit, the calculator unit and the arrangement unit in accordance with the following steps:

a) providing a three-dimensional, deformable model whose surface area is formed by a network of meshes, which connect together points of the network on the surface area of the model, the meshes being divided into groups and each group being allocated a structure function,

b) arranging the model at the position in the three-dimensional data record in which the structure to be segmented is located,

c) determining one candidate point for each mesh with the aid of the structure function of the group to which the mesh concerned belongs,

d) recalculating the points of the network of the model on the basis of the candidate points found,

e) repeating steps c) and d), taking the newly calculated points of the network into account, as long as no termination criterion is met.

9. (Original) A computer program for a control unit for controlling a memory unit, an image reproduction unit, a calculator unit and an arrangement unit of an image processing device for carrying out the method of Claim 1 in accordance with the following steps:

a) providing a three-dimensional, deformable model whose surface area is formed by a network of meshes, which connect together the points of the network on the surface area of the model, the meshes being divided into groups and each group having a structure function,

b) arranging the model at the position in the three-dimensional data record in which the structure to be segmented is located,

c) determining one candidate point for each mesh with the aid of the structure function of the group to which the mesh concerned belongs,

d) recalculating the points of the network of the model on the basis of the candidate points found,

e) repeating steps c) and d), taking the newly calculated points of the network into account, as long as no termination criterion is met.